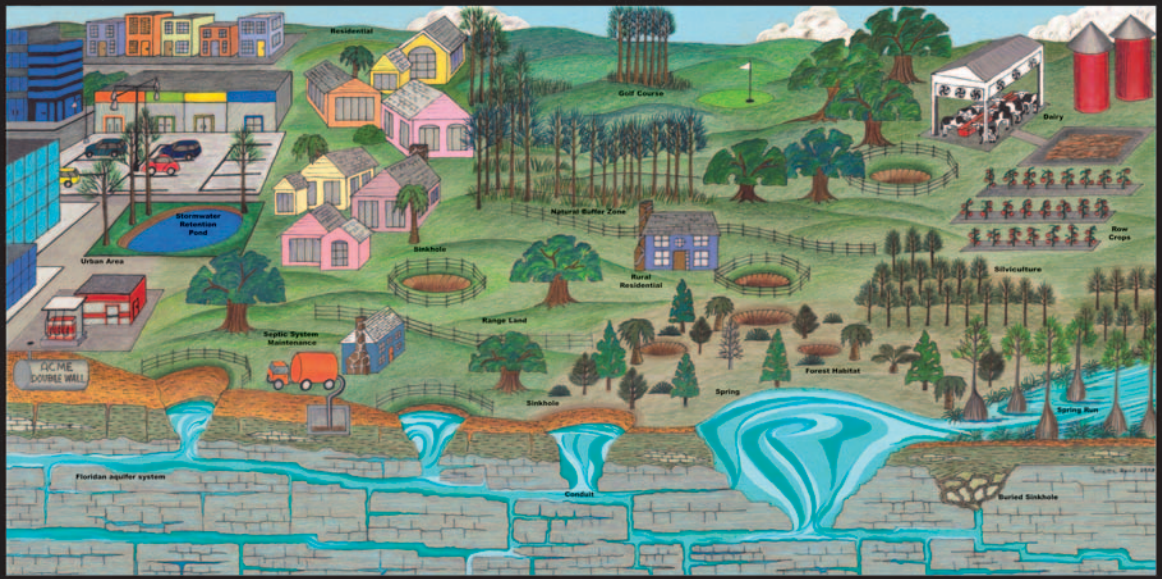
LAND USE AND SPRING PROTECTION



FLORIDA GEOLOGICAL SURVEY

PAULETTE BOND - 2003
FLORIDA GEOLOGICAL SURVEY
POSTER NO. 10

Florida's springs are a treasured part of the state's environmental heritage. Rain falls onto the ground and percolates down through soil and sediment and into the rock layers of the Floridan aquifer system. Rainfall and runoff may flow directly into the aquifer through sinkholes. The Floridan aquifer system is made of layers of limestone and dolostone that contain small connected void spaces (porosity and permeability), cracks or fractures and large tunnels or conduits. Downward moving waters reach these large conduits and flow rapidly through them. Eventually these waters will return to the surface at springs. Water that is destined to become spring water is most vulnerable to pollution at the earth's surface. Human activities are a major source of this pollution. Geology, the science that studies the earth, can predict areas where the aquifer is vulnerable to entry of polluted waters and provide information to land use planners that translates directly into protection for our springs.

In general, activities that have the greatest potential to harm a spring should be sited farthest from it. However waters can enter sinkholes that are distant from the springs they feed making additional protective measures important. Best management practices (BMPs) describe specific steps that can be taken within the springshed to lessen the impact of these activities on springs. When rain falls on roads, buildings and parking lots in urban areas, runoff containing polluting chemicals can move downward into the aquifer. BMP strategies such as stormwater retention ponds are very important. Double-walled underground storage tanks are extremely helpful in protecting groundwater resources. Homeowners may help in spring protection by utilizing native plants in landscaping. Minimal use of lawn chemicals such as pesticides and fertilizers is vital to spring protection. The impact of golf courses on springs can be greatly lessened with appropriate siting, design, and management.

Dairy farming and agriculture are vital to Florida's economy and BMP strategies describe ways in which spring protection can be incorporated into such operations.

Land use should be less intensive closer to springs. Rural residential housing (1 dwelling on 10 acres), along with range land and silviculture are appropriate. In the area closest to the spring, land usages of very low intensity such as forest habitat and recreational hiking are ideal for the protection of the spring environment. Wise stewardship of precious groundwater resources will protect both the quality and quantity of water flowing from springs. Using geology as the foundation for land use planning and protective BMP strategies, the legacy of Florida's springs can be passed proudly to future generations of Floridians.

REFERENCES

Bond, P., 2002, Protecting Florida's Springs, Florida Geological Survey Poster Series.

Copeland, R., 2003, Florida Spring Classification System, Florida Geological Survey Special Publication No. 52, 18 p.

Department of Community Affairs, 2002, Protecting Florida's Springs Land Use Planning Strategies and Best Management Practices, 124 p.

Scott, T.M., Means, G.H., Means, R.C., and Meegan, R.P., 2002, First Magnitude Springs of Florida, Florida Geological Survey Open File Report No. 85, 138 p.